What is claimed is:

1. An integral polishing pad which performs a polishing operation by moving in contact with a surface of an object being polished, the integral polishing pad comprising:

an elastic support layer; and

a polishing layer, which is formed on the elastic support layer and has a higher hardness than the elastic support layer,

the elastic support layer and the polishing layer being made of materials chemically compatible with each other so that a structural border between the elastic support layer and the polishing layer does not exist.

2. The integral polishing pad of claim 1, wherein the elastic support layer has a hardness of 40 to 80 shore A.

3. The integral polishing pad of claim 1, wherein the polishing layer has a hardness of 40 to 80 shore D.

4. The integral polishing pad of claim 1, wherein each of the elastic support layer and the polishing layer comprises at least one material selected from the group consisting of polyurethane, polyether, polyester, polysulfone, polyacryl, polycarbonate, polyethylene, polymethylmetacrylate, polyvinyl acetate, polyvinyl chloride, polyethyleneimine, polyethersulfone, polyetherimide, polyketone, melamine, nylon, and hydrocarbon fluoride.

5. The integral polishing pad of claim 1, wherein The elastic support layer is at least partially transparent to a light source used to detect the surface state of the object being polished, and

the polishing layer is semitransparent to the light source.

6. The integral polishing pad of claim 5, wherein the elastic support layer is made of a nonporous solid uniform polymer,

the polishing layer comprises a polymeric matrix made from a material chemically compatible with the elastic support layer and a plurality of liquid microelements embedded in the polymeric matrix, and

a plurality of open pores defined by the embedded liquid microelements are distributed across a surface of the polishing layer.

7. The integral polishing pad of claim 6, wherein when the surface of the polishing layer is abraded during the polishing operation, the embedded liquid microelements are exposed at the surface of the polishing layer so that the open pores are continuously formed.

8. The integral polishing pad of claim 6, wherein a material for the embedded liquid microelements is a liquid material which is chemically incompatible with the polymeric matrix.

9. The integral polishing pad of claim 8, wherein the liquid material comprises at least one material selected from the group consisting of aliphatic mineral oil, aromatic mineral oil, silicon oil without a hydroxyl group in a molecule, soybean oil, coconut oil, palm oil, cotton seed oil, camellia oil, and hardened oil.

10. The integral polishing pad of claim 9, wherein the content of the liquid material is 20-50 weight percent, based on the total weight of a material for the polymeric matrix.

11. The integral polishing pad of any one of claims 1 through 4, wherein the polishing layer comprises a polymeric matrix made from a material chemically compatible with the elastic support layer and a plurality of embedded liquid microelements and hollow polymeric microelements, which are included within the polymeric matrix, and

a plurality of open pores, which are defined by the embedded liquid microelements and the hollow polymeric microelements, are distributed across a surface of the polishing layer.

12. The integral polishing pad of claim 1, further comprising a structure or pattern including a flow channel in a surface of the polishing layer in order to facilitate delivery of a polishing slurry.

13. An integral polishing pad which performs a polishing operation by moving in contact with a surface of an object being polished, the integral polishing pad comprising:

an elastic support layer, which is at least partially transparent to a light source used to detect the surface state of the object being polished; and

a polishing layer comprising a transparent region, which overlaps the transparent portion of the elastic support layer and is transparent to the light source, and a remaining region, except for the transparent region, which has a higher hardness than the elastic support layer,

the elastic support layer, the transparent region, and the remaining region being made from materials chemically compatible with one another so that structural borders among them do not exist.

14. The integral polishing pad of claim 13, wherein the elastic support layer has a hardness of 40 to 80 shore A.

15. The integral polishing pad of claim 13, wherein the remaining region of the polishing layer except for the transparent region has a hardness of 40 to 80 shore D.

16. The integral polishing pad of claim 13, wherein each of the elastic support layer and the remaining region of the polishing layer comprises at least one material selected from the group consisting of polyurethane, polyether, polyester, polysulfone, polyacryl, polycarbonate, polyethylene, polymethylmetacrylate, polyvinyl acetate, polyvinyl chloride, polyethyleneimine, polyethersulfone, polyetherimide, polyketone, melamine, nylon, and hydrocarbon fluoride.

17. The integral polishing pad of claim 13, wherein the transparent region is made of an organic polymer or an inorganic material coated with the organic polymer.

18. The integral polishing pad of claim 17, wherein the organic polymer comprises at least one material selected from the group consisting of a polyurethane,

polyester, nylon, acryl resin, epoxy resin, polyethylene, polystyrene, polyvinyl chloride, polytetrafluoroethylene, polyvinylidene fluoride, and polyether sulfone.

19. The integral polishing pad of claim 18, wherein the elastic support layer is made of a nonporous solid uniform polymeric elastic material,

20. The integral polishing pad of any one of claims 13 through 16, wherein the remaining region of the polishing layer except for the transparent region comprises a polymeric matrix made from a material chemically compatible with the elastic support layer and a plurality of embedded liquid microelements and/or hollow polymeric microelements, which are included within the polymeric matrix, and

a plurality of open pores, which are defined by the embedded liquid microelements and/or the hollow polymeric microelements, are distributed across a surface of the polishing layer.

21. The integral polishing pad of claim 20, wherein when the surface of the polishing layer is abraded during the polishing operation, the embedded liquid microelements and/or the hollow polymeric microelements are exposed at the surface of the polishing layer so that the open pores are continuously formed.

22. The integral polishing pad of claim 20, wherein a material for the embedded liquid microelements is a liquid material which is chemically incompatible with the polymeric matrix.

23. The integral polishing pad of claim 22, wherein the liquid material comprises at least one material selected from the group consisting of aliphatic mineral oil, aromatic mineral oil, silicon oil without a hydroxyl group in a molecule, soybean oil, coconut oil, palm oil, cotton seed oil, camellia oil, and hardened oil.

24. The integral polishing pad of claim 22, wherein the content of the liquid material is 20-50 weight percent, based on the total weight of a material for the polymeric matrix.

25. The integral polishing pad of claim 13, further comprising a texture or pattern including a flow channel in a surface of the polishing layer in order to facilitate delivery of a polishing slurry.

26. A method of manufacturing a polishing pad, the method comprising:

providing an elastic support layer;

providing a material for a polishing layer, which is chemically compatible with the elastic support layer and has a higher hardness than the elastic support layer, on the elastic support layer; and

forming the polishing layer integrated with the elastic support layer through gelling and curing.

27. The method of claim 26, further comprising providing a transparent element, which is transparent to a light source used to detect the surface state of an object being polished, on a partial portion of the elastic support layer before providing the material for the polishing layer,

wherein providing the material for the polishing layer comprises providing the material for the polishing layer on the remaining portion of the elastic support layer except for the partial portion,

forming the polishing layer comprises forming the polishing layer integrated with the elastic support layer and the transparent element through gelling and curing, and

materials for the elastic support layer, the transparent element, and the polishing layer are chemically compatible with one another.

28. The method of claim 27, wherein at least the partial portion of the elastic support layer is transparent to the light source, and the transparent element is provided at least on the partial portion of the elastic support layer transparent to the light source.

29. A method of manufacturing a polishing pad, the method comprising:

providing a polishing layer having an empty space in a partial portion;

providing a material for an elastic support layer, which is chemically compatible with the polishing layer, has a lower hardness than the polishing layer,

and transparent to a light source used to detect the surface state of an object being polished, on the polishing layer; and

forming the elastic support layer integrated with the polishing layer through gelling and hardening.

30. The method of claim 29, further comprising providing a transparent element, which is transparent to the light source, in the empty space of the polishing layer before providing the material for the elastic support layer,

wherein forming the elastic support layer comprises forming the elastic support layer integrated with the polishing layer and the transparent element through gelling and hardening, and

materials for the elastic support layer, the transparent element, and the polishing layer are chemically compatible with one another.